

# MATERIAL SAFETY DATA SHEET

MSDS DATE: 10/08/2007

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## SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

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PRODUCT NAME: FORMALDEHYDE/GLUTARALDEHYDE, 2.5% EACH IN 0.1M SODIUM CACODYLATE BUFFER  
SYNONYMS: N/A  
PRODUCT CODES: 15949  
MANUFACTURER: ELECTRON MICROSCOPY SCIENCES  
DIVISION: 1560 INDUSTRY ROAD/P.O. BOX 550  
ADDRESS: HATFIELD, PA 19440

EMERGENCY PHONE: 215-412-8400  
CHEMTREC PHONE: 800-424-9300

FAX PHONE: 215-412-8450

CHEMICAL NAME: N/A  
CHEMICAL FAMILY: N/A

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## SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

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<u>INGREDIENT</u>	<u>CAS NO.</u>	<u>%WT</u>	<u>%VOL</u>
FORMALDEHYDE	50-00-0	2.5%	
GLUTARALDEHYDE	111-30-8	2.5%	
SODIUM CACODYLATE	124-65-2	0.1M	
WATER	7732-18-5	BALANCE	

### FORMALDEHYDE

OSHA-PEL-TWA 0.75PPM 0.5PPM "ACTION LIMIT" IN FEDERAL FORMALDEHYDE STANDARD  
OSHA-PEL-STEL 2.0 PPM

### GLUTARALDEHYDE

OSHA-PEL-TWA N/A  
ACGIH-TLV-CEILING N/A  
OSHA-PEL-CEILING 0.2PPM 0.8mg/m<sup>3</sup>

### SODIUM CACODYLATE

OSHA-PEL-TWA 10ug(AS)/m<sup>3</sup>  
ACGIH-TLV-TWA 0.01mg(AS)m<sup>3</sup>

### WATER

N/A

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## SECTION 3: HAZARDS IDENTIFICATION

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EMERGENCY OVERVIEW: DANGER! MAY BE FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CAUSES SEVERE IRRITATION TO EYES, SKIN AND RESPIRATORY TRACT. CANCER HAZARD. CONTAINS ARSENIC WHICH CAN CAUSE CANCER. RISK OF CANCER DEPENDS ON DURATION AND LEVEL OF EXPOSURE. CAUSES LIVER AND KIDNEY DAMAGE. USE ONLY WITH ADEQUATE VENTILATION.

ROUTES OF ENTRY: INGESTION, SKIN, INHALATION.

### POTENTIAL HEALTH EFFECTS:

EYES: CAUSES SEVERE IRRITATION, BURNING AND WATERING OF EYES, MAY CAUSE CONJUNCTIVA DAMAGE.

SKIN: CAUSES SEVERE IRRITATION WITH REDNESS, PAIN. DERMAL ABSORPTION IS MORE LIKELY WITH ORGANIC ARSENIC; SYMPTOMS MAY PARALLEL INGESTION.

INGESTION: HIGHLY TOXIC! MAY CAUSE BURNING IN ESOPHAGUS, VOMITING, AND BLOODY DIARRHEA. SYMPTOMS OF COLD AND CLAMMY SKIN, LOW BLOOD PRESSURE, WEAKNESS, HEADACHES, AND COMA MAY FOLLOW. STRONG GARLIC ODOR ON BREATH, SWEAT, AND URINE MAY OCCUR. MAY CAUSE DAMAGE TO LIVER AND KIDNEYS. A SUSPECTED FETAL TOXIN. DEATH MAY OCCUR FROM CIRCULATORY FAILURE. ESTIMATED LETHAL DOSE 120 MILLIGRAMS.

INHALATION: ARSENIC MAY CAUSE INFLAMMATION OF THE MUCOUS MEMBRANES WITH COUGH

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AND FOAMY SPUTUM, RESTLESSNESS, DYSPNEA, CYANOSIS, AND RALES. SYMPTOMS LIKE THOSE FROM INGESTION EXPOSURE MAY FOLLOW.MAY CAUSE PULMONARY EDEMA.

ACUTE HEALTH HAZARDS: N/A

CHRONIC HEALTH HAZARDS: ARSENIC ON REPEATED OR PROLONGED SKIN CONTACT MAY CAUSE BRONZING OF THE SKIN, EDEMA, DERMATITIS, AND LESIONS. INHALATION OF THE DUST BY CAUSE DAMAGE TO THE NASAL SEPTUM. MAY CAUSE HAIR AND WEIGHT LOSS, AND KIDNEY AND LIVER DAMAGE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: N/A

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## CARCINOGENICITY

OSHA: N/A      ACGIH: N/A      NTP: N/A      IARC: N/A  
OTHER:

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## SECTION 4: FIRST AID MEASURES

EYES: FLUSH WITH WATER FOR 15 MINUTES IF IRRITATION OCCURS. SEEK MEDICAL ATTENTION

SKIN: WASH WITH SOAP AND WATER. IF IRRITATION OCCURS. SEEK MEDICAL ATTENTION.

INGESTION: INDUCE VOMITING IMMEDIATELY AS DIRECTED BY MEDICAL PERSONNEL. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. GET MEDICAL ATTENTION IMMEDIATELY.

INHALATION: REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATOR. IF BREATHING IS DIFFICULT, GIVE OXYGEN, GET MEDICAL ATTENTION IMMEDIATELY. PROMPT ACTION IS ESSENTIAL.

NOTES TO PHYSICIANS OR FIRST AID PROVIDERS: N/A

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## SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABLE LIMITS IN AIR, UPPER: N/A  
(% BY VOLUME)

FLASH POINT:

METHOD USED:

AUTOIGNITION TEMPERATURE: N/A

F:  
C:

### NFPA HAZARD CLASSIFICATION

HEALTH: 4      FLAMMABILITY: 0      REACTIVITY: 1  
OTHER:

### HMIS HAZARD CLASSIFICATION

HEALTH: 4      FLAMMABILITY: 0      REACTIVITY: 1  
PROTECTION:

EXTINGUISHING MEDIA: USE ANY MEANS SUITABLE FOR EXTINGUISHING SURROUNDING FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: NOT CONSIDERED TO BE AN EXPLOSION HAZARD

HAZARDOUS DECOMPOSITION PRODUCTS:

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## SECTION 6: ACCIDENTAL RELEASE MEASURES

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ACCIDENTAL RELEASE MEASURES: VENTILATE AREA OF LEAK OR SPILL. REMOVE ALL SOURCES OF IGNITION. WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT AS SPECIFIED IN SECTION 8. ISOLATE HAZARD AREA. KEEP UNNECESSARY AND UNPROTECTED PERSONNEL FROM ENTERING. CONTAIN AND RECOVER LIQUID WHEN POSSIBLE. USE SPARKING TOOLS AND EQUIPMENT. COLLECT LIQUID IN AN APPROPRIATE CONTAINER OR ABSORB WITH AN INERT MATERIAL (E.G. VERMICULITE, DRY SAND, EARTH) AND PLACE IN A CHEMICAL WASTE CONTAINER. DO NOT USE COMBUSTIBLE MATERIALS, SUCH AS SAW DUST. DO NOT FLUSH TO SEWER! REFER TO US REGULATIONS FOR DISPOSAL.

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## SECTION 7: HANDLING AND STORAGE

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HANDLING AND STORAGE: PROTECT FROM DIRECT SUNLIGHT, PROTECT AGAINST PHYSICAL DAMAGE. STORE IN A COOL, DRY WELL-VENTILATED LOCATION, AWAY FROM ANY AREA WHERE THE FIRE HAZARD MAY BE ACUTE. OUTSIDE OR DETACHED STORAGE IS PREFERRED. SEPARATE FROM INCOMPATIBLES. CONTAINERS SHOULD BE BONDED AND GROUNDED FOR TRANSFERS TO AVOID STATIC SPARKS. DO NOT STORE IN SMOKING AREAS. USE NON-SPARKING TYPE TOOLS AND EQUIPMENT, INCLUDING EXPLOSION PROOF VENTILATION. INSIDE STORAGE SHOULD BE IN A STANDARD FLAMMABLE LIQUIDS STORAGE ROOM OR CABINET. CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTY SINCE THEY RETAIN PRODUCT RESIDUES; OBSERVE ALL WARNINGS AND PRECAUTIONS LISTED FOR THE PRODUCT.

OTHER PRECAUTIONS: N/A

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## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

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ENGINEERING CONTROLS: N/A

VENTILATION: A SYSTEM OF LOCAL AND OR GENERAL EXHAUST IS RECOMMENDED TO KEEP EMPLOYEE EXPOSURES BELOW THE AEL.

RESPIRATORY PROTECTION: IF THE EXPOSURE LIMIT IS EXCEEDED AND ENGINEERING CONTROLS ARE NOT FEASIBLE, WEAR A SUPPLIED AIR, FULL FACEPIECE RESPIRATOR, AIRLINED HOOD, BREATHING APPARATUS. BREATHING AIR QUALITY MUST MEET THE REQUIREMENTS OF THE OSHA RESPIRATORY PROTECTION STANDARD.

EYE PROTECTION: USE CHEMICAL SAFETY GOGGLES AND OR A FULL FACE SHIELD WHERE SPLASHING IS POSSIBLE. MAINTAIN EYE WASH FOUNTAIN AND QUICK DRENCH FACILITIES IN WORK AREA.

SKIN PROTECTION: WEAR IMPERVIOUS PROTECTIVE CLOTHING, INCLUDING BOOTS, GLOVES, LAB COAT, APRON, OR COVERALLS, AS APPROPRIATE TO PREVENT SKIN CONTACT.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: N/A

WORK HYGIENIC PRACTICES: WASH THOROUGHLY AFTER HANDLING. WASH CLOTHING BEFORE REUSE.

EXPOSURE GUIDELINES: N/A

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## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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APPEARANCE: TRANSPARENT, COLORLESS

ODOR: SPECIFIC ODOR

PHYSICAL STATE: LIQUID

pH AS SUPPLIED: 7.4

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pH (Other):

BOILING POINT: (LIKE) WATER

F:

C:

MELTING POINT: (LIKE) WATER

F:

C:

FREEZING POINT: N/A

F:

C:

VAPOR PRESSURE (mmHg): N/A

F:

C:

EVAPORATION RATE: N/A

BASIS (=1):

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## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES (con't)

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SOLUBILITY IN WATER: (LIKE) WATER

PERCENT SOLIDS BY WEIGHT: N/A

PERCENT VOLATILE:

BY WT/ BY VOL @ N/A

F:

C:

VOLATILE ORGANIC COMPOUNDS (VOC): N/A

WITH WATER:	LBS/GAL
WITHOUT WATER:	LBS/GAL

DENSITY: 1.02

VISCOSITY: N/A

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F:

C:

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## SECTION 10: STABILITY AND REACTIVITY

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STABILITY: STABLE UNDER ORDINARY CONDITIONS OF USE AND STORAGE

CONDITIONS TO AVOID (STABILITY): INCOMPATIBLES.

INCOMPATIBILITY (MATERIAL TO AVOID): REDUCING AGENTS, ALUMINUM, ZINC, COMMON METALS (CORROSIVE) AND SODIUM BOROHYDRIDE.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: MAY EMIT OXIDES OF CARBON AND ARSENIC WHEN HEATED TO DECOMPOSITION. REDUCING AGENTS MAY RELEASE TOXIC ARSINE GAS.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

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## SECTION 11: TOXICOLOGICAL INFORMATION

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TOXICOLOGICAL INFORMATION: INVESTIGATED AS TUMORIGEN, MUTAGEN, REPRODUCTIVE EFFECTOR.

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## SECTION 12: ECOLOGICAL INFORMATION

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ECOLOGICAL INFORMATION: THIS MATERIAL IS EXPECTED TO BE VERY TOXIC TO AQUATIC LIFE. THE LC50/96-HOUR VALUES FOR FISH ARE LESS THAN 1 MG/L.

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## SECTION 13: DISPOSAL CONSIDERATIONS

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WASTE DISPOSAL METHOD: COMPLY WITH FEDERAL, STATE, LOCAL REGULATIONS.

RCRA HAZARD CLASS: N/A

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## SECTION 13: DISPOSAL CONSIDERATIONS (con't)

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## SECTION 14: TRANSPORT INFORMATION

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### U.S. DEPARTMENT OF TRANSPORTATION

PROPER SHIPPING NAME:

HAZARD CLASS:

ID NUMBER: NOT REGULATED

PACKING GROUP:

LABEL STATEMENT:

### WATER TRANSPORTATION

PROPER SHIPPING NAME: SAME

HAZARD CLASS:

ID NUMBER:

PACKING GROUP:

LABEL STATEMENTS:

### AIR TRANSPORTATION

PROPER SHIPPING NAME: SAME

HAZARD CLASS:

ID NUMBER:

PACKING GROUP:

LABEL STATEMENTS:

OTHER AGENCIES:

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## SECTION 15: REGULATORY INFORMATION

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### U.S. FEDERAL REGULATIONS

TSCA (TOXIC SUBSTANCE CONTROL ACT): YES

CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT): N/A

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT): YES

311/312 HAZARD CATEGORIES: YES

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**313 REPORTABLE INGREDIENTS: N/A**

**STATE REGULATIONS: N/A**

**INTERNATIONAL REGULATIONS: N/A**

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## **SECTION 16: OTHER INFORMATION**

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**OTHER INFORMATION:**

**PREPARATION INFORMATION:**

**DISCLAIMER: IN COMPLIANCE WITH THE OSHA HAZARD COMMUNICATION STANDARD, 2.9 C.F.R. 1910. 1200, WE ARE PROVIDING YOU WITH A MSDS FOR THE HAZARDOUS MATERIAL YOU ARE PURCHASING.**

**IT IS YOUR RESPONSIBILITY TO EDUCATE YOUR EMPLOYEES ON THE SAFE USE OF THE HAZARDOUS MATERIAL.**

**ELECTRON MICROSCOPY SCIENCES MAKES NO PRESENTATION AS TO THE ACCURACY OF THE INFORMATION IN THE MSDS. THE INFORMATION IS BELIEVED TO BE CORRECT; HOWEVER, YOU (THE CUSTOMER), SHOULD PERFORM YOUR OWN INVESTIGATION AND INDEPENDENT VERIFICATION. IF YOU RESELL THE PRODUCT, YOU ARE RESPONSIBLE TO FORWARD THE INFORMATION IN THE MSDS TO YOUR CUSTOMER.**